



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------------------|------------------------|------------------|
| 10/626,574 | 07/25/2003 | Hiroyuki Mishima | 2003-1015A | 9548 |
| 513 | 7590 | 04/13/2005 | EXAMINER | |
| | | WENDEROTH, LIND & PONACK, L.L.P. | KEEEHAN, CHRISTOPHER M | |
| | | 2033 K STREET N. W. | | |
| | | SUITE 800 | ART UNIT | PAPER NUMBER |
| | | WASHINGTON, DC 20006-1021 | 1712 | |

DATE MAILED: 04/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/626,574 | MISHIMA ET AL. | |
| | Examiner | Art Unit | |
| | Christopher M. Keehan | 1712 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 25 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-12 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 8, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al. (WO 98/31538). Regarding claims 1, 8, 11, and 12, Brown et al. disclose a prepreg comprising a thermosetting resin, particularly a non-halogenated epoxy (page 3, lines 11-12), containing an aluminum hydroxide-boehmite composite obtained by hydrothermal treatment of aluminum hydroxide (page 4, lines 11-26), and a substrate, more specifically a laminate and metal-foil clad laminate as claimed (page 3, lines 4-9).

Regarding claim 3, Brown et al. disclose an amount of composite included in the instantly claimed range (page 3, lines 14-17).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (WO 98/31538) in view of Ishii et al. (5,368,921). Brown et al., as applied above, are as set forth and incorporated herein. Brown et al. do not appear to specifically disclose cyanate ester resins or a silane coupling agent. Brown et al. do disclose that any thermosetting resin can be used in their prepreg (page 2, lines 26-28). Ishii et al. disclose a metal-foil clad laminate comprising a resin of a cyanate resin or epoxy resin as claimed (col.3, lines 2-28), an aluminum oxide filler (col.3, lines 32-33), and a silane coupling agent (col.4, lines 19-22). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a cyanate ester resin and silane coupling agent as taught by Ishii et al. in the prepreg of Brown et al. because Ishii et al. teach that using the cyanate ester resin and coupling agent in a prepreg produces surface smoothness, heat resistance, drilling processability, and workability, resulting in a higher quality product.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (WO 98/31538). Brown et al, as applied above, are as set forth and incorporated herein. Brown et al. do not appear to specifically disclose the weight ratio of aluminum hydroxide to boehmite as claimed. However, as Brown et al. do disclose the same process of obtaining the composite and recognize the criticality of the composite's ratio of aluminum hydroxide to boehmite (page 4, lines 11-16), and applicant is claiming such a broad range, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the ratio of aluminum hydroxide to boehmite

to a variety of amounts, including an amount included in applicant's claimed range, through routine experimentation and optimization. A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (WO 98/31538) in view of Kohm et al. (5,264,065). Brown et al, as applied above, are as set forth and incorporated herein. Brown et al. do not appear to specifically disclose, in addition to the aluminum hydroxide-boehmite composite, adding aluminum hydroxide or boehmite, and in the amounts as instantly claimed. Kohm et al. disclose a known prepreg comprising an epoxy resin and adding boehmite or aluminum hydroxide (col.3, lines 36-46). Therefore, as applicant's claimed range is so broad, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have added the additional aluminum hydroxide or boehmite in a variety of amounts to impart flame retardancy to the composition, resulting in a higher quality product.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (WO 98/31538) in view of Gaku et al. (6,097,089). Brown et al., as applied above, are as set forth and incorporated herein. Brown et al. do not appear to specifically disclose the instantly claimed cyanate ester and epoxy resins. Gaku et al. disclose a prepreg comprising resins of cyanate ester (col.10, lines 33-43) and epoxy resins (col.10, line 61-col.11, line 4) as claimed, and adding various fillers (col.11, line 34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the cyanate ester and epoxy resins as claimed as taught by Gaku et al. in the prepreg of Brown et al. because Gaku et al. teach that using the claimed resins produces a prepreg improved in heat diffusibility, excellent in connection reliability, and improved economic performance, resulting in a higher quality product.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Keehan whose telephone number is (571) 272-1087. The examiner can normally be reached on Monday-Friday, from 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy P. Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1712

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christopher Keehan

CKH
DAVID J. BUTTNER
PRIMARY EXAMINER

April 11, 2005

David Buttner